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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/885,206	06/20/2001	William W. Chen	CRC-138	4617

7590 08/11/2003

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EXAMINER	
KITOV, ZEEV	
ART UNIT	PAPER NUMBER
2836	

DATE MAILED: 08/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/885,206	Applicant(s) CHEN ET AL.	
	Examiner Zeev Kitov	Art Unit 2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 June 2001* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 - 25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 - 25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Pri rity under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *4* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

1. Drawings

Figures 1A and 1B should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

2. Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1, 8 and 15 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. A reason for that is that the claims recite following: "a metallic core electrically connected to said transformer coil body". According to Specification, "the transformer core 170, comprising laminated steel sheets". Specification does not provide details on the way such connection is done. However, if the transformer body, which includes a primary and secondary coils of the transformer, is connected to some amount (more

than one) laminated steel sheets, it will shorten them and will create substantial additional heating in the core due to a well known in the art effect, Eddy currents. Examiner does not believe that the goal of a current application is in any way to worsen thermal characteristics of the transformer. Therefore, for purpose of examination it was interpreted as follows: "a metallic core being magnetically coupled to said transformer coil body".

3. Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

a) Claims 22, 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kruger (US 3,631,322) in a view of Horsma et al. (US 4,177,376).

Regarding Claim 22, Kruger discloses following elements of the claim including electrically connecting a positive temperature coefficient resistivity element (element 21 in Fig. 1) in series with a primary winding of the transformer (elements 16 and 14 in Fig. 1, col. 2, lines 47 – 58 form a ballast/auto-transformer). It further discloses the positive temperature coefficient resistivity element, which increases its resistivity by several orders of magnitude (at least 100 times) upon an occurrence of an activation event. However, it does not disclose a polymer PCT. Horsma et al. disclose the polymer PCT element (see Fig. 6 – 34, col.15, line 3 through col. 16, line 59). Both patents have the

same problem solving area, namely thermal protection of the electrical equipment. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the PTC element of Kruger according to teachings of Horsma et al., because as Horsma et al., state (col. 1, lines 29 – 39), the polymer PTC have an advantage over ceramic PTC due to its flexibility, which makes easier forming a thermal contact with a protected element.

Regarding Claim 24, Kruger discloses an activation event is an overcurrent condition (col. 3, lines 17 – 30).

Regarding Claim 25, Kruger discloses the activation event as a rise in transformer temperature (col. 3, lines 17 – 24). It is well known in the art, that the temperature of transformer is a sum of an ambient temperature and its own; therefore with increase of the ambient temperature, the transformer temperature will increase accordingly, thus triggering such activation event.

b) Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kruger in a view of Horsma et al. and further in a view of Harmsen et al. (US 5,028,216). As was stated above, Kruger and Horsma et al. disclose all the elements of Claim 22. However, regarding Claim 23 they do not disclose an activation event as a short circuit condition. Harmsen et al. disclose the activation event as the short circuit condition (Fig. 4, col. 4, lines 26 – 44). Both patents have the same problem solving area, namely protection of transformers by using PTC. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the solution

of Kruger and Horsma et al. for protection of the short circuit condition according to Harmsen et al., because as well known in the art that even though the short circuit condition is an extreme event, but it has all the same characteristics as the over current condition and can be protected the same way.

c) Claims 1 and 3 - 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kruger in a view of Horsma et al. Kruger discloses a power auto-transformer (ballast) including a transformer coil body (elements 14 and 16 in Fig. 1 and 4), a metallic core (element 18 in Fig. 4, col. 1, lines 12 –15) and a temperature resistivity element (element 21 in Fig. 1) electrically connected to said transformer coil body to limit current flow through said transformer coil body upon an occurrence of an activation event (col. 3, lines 3 – 32). It further discloses a metallic core being magnetically coupled to the transformer coil body, since both primary and secondary coils mounted around the core (col. 2, lines 47 - 50).

However, it does not disclose a polymer made temperature resistivity element. Horsma et al. disclose the polymer PCT element (see Fig. 6 – 34, col.15, line 3 through col. 16, line 59). Both patents have the same problem solving area, namely thermal protection of the electrical equipment. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the PTC element of Kruger according to teachings of Horsma et al., because as Horsma et al., state (col. 1, lines 29 – 39), the polymer PTC have an advantage over ceramic PTC due to its flexibility, which makes easier forming a thermal contact with a protected element.

Regarding Claim 3, Kruger discloses an activation event is an overcurrent condition (col. 3, lines 17 – 30).

Regarding Claim 4, Kruger discloses the activation event as a rise in transformer temperature (col. 3, lines 17 – 24). It is well known in the art, that the temperature of transformer is a sum of an ambient temperature and its own; therefore with increase of the ambient temperature, the transformer temperature will increase accordingly, thus triggering such activation event.

Regarding Claim 5, Kruger discloses a power auto-transformer (ballast) including a transformer coil body, which includes primary and secondary windings (elements 14 and 16 in Fig.1 and 4).

Regarding Claims 6 and 7, Kruger discloses the positive temperature resistivity element electrically connected to both the primary and the secondary windings of the transformer coil body (element 21 is connected to elements 16 and 14 in Fig. 1). As to the positive temperature resistivity element being made of polymer, Horsma et al. disclose the polymer PCT element (see Fig. 6 – 34, col.15, line 3 through col. 16, line 59). Both patents have the same problem solving area, namely thermal protection of the electrical equipment. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the PTC element of Kruger according to teachings of Horsma et al., because as Horsma et al., state (col. 1, lines 29 – 39), the polymer PTC have an advantage over ceramic PTC due to its flexibility, which makes easier forming a thermal contact with a protected element.

d) Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kruger in a view of Horsma et al. and further in a view of Harmsen et al. As was stated above, Kruger and Horsma et al. disclose all the elements of Claim 1. However, regarding Claim 2, they do not disclose an activation event as a short circuit condition. Harmsen et al. disclose the activation event as the short circuit condition (Fig. 4, col. 4, lines 26 – 44). Both patents have the same problem solving area, namely protection of transformers by using PTC. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the solution of Kruger and Horsma et al. for protection of the short circuit condition according to Harmsen et al., because as well known in the art that even though the short circuit condition is an extreme event, but it has all the same characteristics as the over current condition and can be protected the same way.

e) Claims 8, 10 - 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kruger in a view of Horsma et al. and further in a view of Innes (US 5,493,101). Regarding Claim 8, Kruger discloses a power auto-transformer (ballast) including a transformer coil body (elements 14 and 16 in Fig. 1 and 4), a metallic core (element 18 in Fig. 4, col. 1, lines 12 –15) and a temperature resistivity element (element 21 in Fig. 1) electrically connected to said transformer coil body to limit current flow through said transformer coil body upon an occurrence of an activation event (col. 3, lines 3 – 32). It further discloses a metallic core being magnetically coupled to the transformer coil body, since both primary and secondary coils mounted around the core (col. 2, lines 47

- 50). However, it does not disclose a polymer made temperature resistivity element. Neither it discloses a light emitting diode.

Horsma et al. disclose the polymer PCT element (see Fig. 6 – 34, col.15, line 3 through col. 16, line 59). Both patents have the same problem solving area, namely thermal protection of the electrical equipment. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the PTC element of Kruger according to teachings of Horsma et al., because as Horsma et al., state (col. 1, lines 29 – 39), the polymer PTC have an advantage over ceramic PTC due to its flexibility, which makes easier forming a thermal contact with a protected element.

Innes discloses a light emitting diode (element 13 in Fig. 1) electrically coupled to the positive temperature resistivity element (element 10 in Fig. 1) to signal activation of the polymer positive temperature resistivity element (col. 5, line 8 through col. 6, line 8). Both patents have the same problem solving area, namely protecting electronic equipment with help of PTC. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have further modified solution of Kruger according to Innes, because as Innes states (col. 2, lines 15 – 40), such LED indication will help to make the PTC truly reusable.

Regarding Claim 10, Kruger discloses an activation event is an overcurrent condition (col. 3, lines 17 – 30).

Regarding Claim 11, Kruger discloses the activation event as a rise in transformer temperature (col. 3, lines 17 – 24). It is well known in the art, that the

temperature of transformer is a sum of an ambient temperature and its own; therefore with increase of the ambient temperature, the transformer temperature will increase accordingly, thus triggering such activation event.

Regarding Claim 12, Kruger discloses a power auto-transformer (ballast) including a transformer coil body, which includes primary and secondary windings (elements 14 and 16 in Fig.1 and 4).

Regarding Claims 13 and 14, Kruger discloses the positive temperature resistivity element electrically connected to both the primary and the secondary windings of the transformer coil body (element 21 is connected to elements 16 and 14 in Fig. 1). As to the positive temperature resistivity element being made of polymer, Horsma et al. disclose the polymer PCT element (see Fig. 6 – 34, col.15, line 3 through col. 16, line 59). Both patents have the same problem solving area, namely thermal protection of the electrical equipment. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the PTC element of Kruger according to teachings of Horsma et al., because as Horsma et al., state (col. 1, lines 29 – 39), the polymer PTC have an advantage over ceramic PTC due to its flexibility, which makes easier forming a thermal contact with a protected element.

f) Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kruger in a view of Horsma et al. and Innes and further in a view of Harmsen et al. As was stated above, Kruger, Horsma et al. and Innes disclose all the elements of Claim 8. However, regarding Claim 9, they do not disclose an activation event as a short circuit condition.

Harmsen et al. disclose the activation event as the short circuit condition (Fig. 4, col. 4, lines 26 – 44). Both patents have the same problem solving area, namely protection of transformers by using PTC. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the solution of Kruger and Horsma et al. for protection of the short circuit condition according to Harmsen et al., because as well known in the art that even though the short circuit condition is an extreme event, but it has all the same characteristics as the over current condition and can be protected the same way.

g) Claims 15, 17- 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kruger in a view of Horsma et al. and further in a view of Mody (US 5,667,711). Regarding Claim 15, Kruger discloses a power auto-transformer (ballast) including a transformer coil body (elements 14 and 16 in Fig. 1 and 4), a metallic core (element 18 in Fig. 4, col. 1, lines 12 –15) and a temperature resistivity element (element 21 in Fig. 1) electrically connected to said transformer coil body to limit current flow through said transformer coil body upon an occurrence of an activation event (col. 3, lines 3 – 32). It further discloses a metallic core being magnetically coupled to the transformer coil body, since both primary and secondary coils mounted around the core (col. 2, lines 47 - 50). However, it does not disclose a polymer made temperature resistivity element. Neither it discloses a solenoid connected in parallel with the PTC and driving a switch.

Horsma et al. disclose the polymer PCT element (see Fig. 6 – 34, col.15, line 3 through col. 16, line 59). Both patents have the same problem solving area, namely

thermal protection of the electrical equipment. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the PTC element of Kruger according to teachings of Horsma et al., because as Horsma et al., state (col. 1, lines 29 – 39), the polymer PTC have an advantage over ceramic PTC due to its flexibility, which makes easier forming a thermal contact with a protected element.

As to the solenoid and switch, Mody discloses the solenoid (element 34 in Fig. 2) electrically connected in parallel with the positive temperature coefficient resistivity element (element 32 in Fig. 2) creating a magnetic field when current flows through the solenoid and a switch (element 36 in Fig. 2) mechanically linked to said solenoid and electrically connected in series with the protected element, the switch activated into an open position to eliminate leakage current flow to the protected element upon activation of said positive temperature resistivity element and current flow through the protected element (transformer). Both patents have the same problem solving area, namely protecting electrical equipment by using PTC. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have further modified the Kruger solution with a help of solenoid and switch of Mody, because as Mody states (col. 2, line 57 through col. 3, line 7), it reduces the parts count and space requirements in comparison with other trip mechanism solutions. Additionally since the current normally does not flow through the solenoid, it reduces power dissipation. And as well known in the art, due to a relay amplification mechanism, the switch driven by

the solenoid is able of controlling (protecting) the load carrying the current much higher than that flowing through the PTC element and solenoid.

Regarding Claim 17, Kruger discloses an activation event is an overcurrent condition (col. 3, lines 17 – 30).

Regarding Claim 18, Kruger discloses the activation event as a rise in transformer temperature (col. 3, lines 17 – 24). It is well known in the art, that the temperature of transformer is a sum of an ambient temperature and its own; therefore with increase of the ambient temperature, the transformer temperature will increase accordingly, thus triggering such activation event.

Regarding Claim 19, Kruger discloses a power auto-transformer (ballast) including a transformer coil body, which includes primary and secondary windings (elements 14 and 16 in Fig.1 and 4).

Regarding Claims 20 and 21, Kruger discloses the positive temperature resistivity element electrically connected to both the primary and the secondary windings of the transformer coil body (element 21 is connected to elements 16 and 14 in Fig. 1). As to the positive temperature resistivity element being made of polymer, Horsma et al. disclose the polymer PCT element (see Fig. 6 – 34, col.15, line 3 through col. 16, line 59). Both patents have the same problem solving area, namely thermal protection of the electrical equipment. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the PTC element of Kruger according to teachings of Horsma et al., because as Horsma et al.,

state (col. 1, lines 29 – 39), the polymer PTC have an advantage over ceramic PTC due to its flexibility, which makes easier forming a thermal contact with a protected element.

h) Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kruger in a view of Horsma et al. and Mody and further in a view of Harmsen et al. As was stated above, Kruger, Horsma et al. disclose all the elements of Claim 15. However, regarding Claim 16, they do not disclose an activation event as a short circuit condition. Harmsen et al. disclose the activation event as the short circuit condition (Fig. 4, col. 4, lines 26 – 44). Both patents have the same problem solving area, namely protection of transformers by using PTC. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the solution of Kruger and Horsma et al. for protection of the short circuit condition according to Harmsen et al., because as well known in the art that even though the short circuit condition is an extreme event, but it has all the same characteristics as the over current condition and can be protected the same way.

4. Conclusion

The prior art made of record not relied upon is considered pertinent to applicant's disclosure: US 5,689,395, US 4,011,427, US 4,132,863, US 5,644,283.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zeev Kitov whose telephone number is (703) 305-0759. The examiner can normally be reached on 8:00 – 4:30. If attempts to reach examiner by

telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on (703) 308-3119. The fax phone numbers for organization where this application or proceedings is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Z.K. 07/30/2003

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